

REMARKS

This application has been reviewed in light of the Non-Final Office Action mailed August 2, 2007. Claims 1-5 are now pending in the application. No new matter has been added. The Examiner's reconsideration of the rejections in view of the following remarks is respectfully requested.

§102 REJECTION

By the Office Action, claims 1-2 stand rejected under 35 U.S.C. §102(b) as being anticipated in view of by U.S. Patent No. 4,459,510 to Joorman (hereinafter Joorman). The rejection is respectfully traversed.

“Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim” (Lindemann Maschinensfabrik GmbH v. American Hoist & Derrick Co., 730 F. 2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)). (emphasis added). The Applicant respectfully submits that Joorman fails to teach each and every element of the Applicant’s claimed invention.

In the Office Action, the Examiner alleges that Joorman teaches at least all the elements of claim 1, including “a low-pressure gas discharge lamp... equipped with a gas-discharge vessel containing an inert gas filling as the buffer gas and an indium, thallium and/or copper halide... with electrodes and with means for generating and maintaining a low-pressure gas discharge... characterized in that it has, as the electron emitter substance a mixture of BaO, SrO, CaO and MgO wherein a) the molar proportion of BaO is less than 1 percent by weight, b) the molar proportion of SrO is less than 10 percent by weight, c) the sum of the molar proportions of CaO and MgO is greater than 90 percent by weight, while the CaO proportion in the CaO/MgO mixture lies between 10 and 90 percent by weight. However, after careful review of Joorman,

the Applicant respectfully disagrees.

While Joorman generally teaches a discharge lamp, its inventive focus is directed to providing a *glass* composition for use in a lamp vessel that is resistant to attack by electrons and by the gas atmosphere. *See e.g.*, Col. 1, lines 19-30; lines 56-68, which includes, *inter alia*, the statement: “[T]he invention provides a lamp made of a glass which is adequately resistant to electron attack and to atmospheric influences and which can be worked much easier in a flame, for example, for deforming, sealing, etc., without the occurrence of crystallization.” However, Joorman’s objective bears no relation to the objective of the present invention, which involves providing a novel *electron emitter substance* (an electrode coating) that is non-reactive with a non-mercury gas filling containing copper, thallium or indium compounds.

Any reference to alkaline earth oxides (*e.g.*, CaO, BaO, MgO and SrO compounds) in Joorman is in reference to their inclusion in Joorman’s **glass composition**, which is not to be confused with the present invention’s disclosure and use of a specific alkaline earth oxide mixture as an **electron emitter substance for coating internal electrodes** in low-pressure gas discharge lamps containing copper, thallium or indium compounds in their gas filling. *E.g., see* Joorman, Col. 2, lines 1-6, which asserts: “[T]he glass according to the invention is characterized in that the glass contains 44-60 mole % SiO₂; 0-7.5 mole % B₂O₃; 0-6 mole % ZrO₂; 0-7.5 mole % Al₂O₃; 5-20 mole % CaO; 12.5-25 mole % BaO; 0-15 mole % MgO; 0-10 mole % SrO; 2-8 mole % Na₂O, the sum of the alkaline earth metals being 25-42.5 mole %.” Joorman further states that “[O]xides, carbonates, hydroxides, etc., maybe used as the raw materials to prepare the glass according to the invention.”

However, Joorman fails to disclose or suggest, and is in fact silent with respect to any mention of at least an electron emitter substance, much less an **electron emitter substance**

comprising a mixture of BaO, SrO, CaO and MgO wherein the molar proportion of BaO is less than 1 percent by weight, the molar proportion of SrO is less than 10 percent by weight, and the sum of the molar proportions of CaO and MgO is greater than 90 percent by weight, while the CaO proportion in the CaO/MgO mixture lies between 10 and 90 percent by weight, essentially as presently claimed in claim 1.

Joorman makes a general reference to 'electrodes' in Col. 1, lines 8-13, stating that "[T]he invention relates to a discharge lamp having a glass lamp vessel which is sealed in a vacuum-tight manner, the lamp vessel comprising electrodes which are connected to two current supply leads and between which a discharge takes place during operation of the lamp..." In Col. 2, lines 61-68, Joorman asserts: "[T]he lamp consists of a lamp vessel 1, which is sealed in a vacuum-tight manner. Current feed-through wires 2 are led through the lamp vessel walls. The current feed-through wires 2 are connected to electrodes 3. In the shown embodiment, the electrodes 3 consist of filaments. Any further known embodiment is of course suitable for the electrodes." However, there is no teaching or disclosure in Joorman of an electrode coating substance as presently claimed.

Furthermore, even assuming *arguendo*, that Joorman's stated mole percentages were in reference to an electrode coating mixture, they fail to teach each of the molar proportions of the presently claimed invention. Compare Joorman's composition of which the mole percentages are disclosed as follows: "... 5-20 mole % CaO; 12.5-25 mole % BaO; 0-15 mole % MgO; 0-10 mole % SrO; 2-8 mole % Na₂O, the **sum of the alkaline earth metals being 25-42.5 mole %**," with the claimed electron emitter substance having a molar proportion of BaO < 1% by weight, a molar proportion of SrO of < 10% by weight, and a sum of molar proportions of CaO and MgO greater than 90% by weight, while the CaO proportion in the CaO/MgO mixture lies between 10 and 90% by weight.

It is therefore respectfully submitted that for at least the reasons above, independent claim 1 is not anticipated by the teachings of Joorman, and as such, is patentable and nonobvious in view of Joorman. Dependent claim 2 depends directly from claim 1 and, as such, is believed to be patentable for at least the reasons stated above for claim 1. Reconsideration and withdrawal of the 102 rejection is respectfully requested.

§103 REJECTION

By the Office Action, claims 3-5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Joorman in view of U.S. Patent No. 5,614,784 to Harzig et al. (hereinafter Harzig).

The Applicant respectfully disagrees with the rejection.

The Examiner cites Harzig as allegedly teaching the features of claims 3-5. Firstly, as set forth above, claim 1 is believed to be patentable in view of Joorman and thus in condition for allowance. Therefore, claims 3-5 are also believed to be in condition for allowance due at least to their dependency from claim 1.

To address the cited reference in detail however, while Harzig arguably teaches “a fluorescent material” coating, and generally describes an electron emitter coated on electrodes, it fails to cure the deficiencies of Joorman. Namely, Harzig’s disclosed electron emitter is comprised of barium oxide and up to about 20 mol-% of strontium oxide. *See, e.g., Col. 2, lines 10-17; Col. 4, lines 27-40; and Claim 1.*

However, it is clearly apparent that there is no teaching or suggestion in either Joorman and/or Harzig, explicit or implied, of at least an electron emitter substance comprising a **mixture of BaO, SrO, CaO and MgO** wherein the molar proportion of BaO is less than 1 percent by weight, the molar proportion of SrO is less than 10 percent by weight, and the sum of the molar

proportions of CaO and MgO is greater than 90 percent by weight, while the CaO proportion in the CaO/MgO mixture lies between 10 and 90 percent by weight, essentially as presently claimed in claim 1. Claims 3-5 depend from and include all the limitations of claim 1, and are thus believed to be allowable for at least the reasons stated for claim 1.

Further, note that Harzig's electron emitter is directed for use with **mercury** vapor lamps, and thus teaches away from the present invention, which provides an electron emitter substance specially developed for use in **non-mercury** gas discharge lamps, which in particular, include copper, thallium and indium compounds in their gas filling. *See e.g., Col. 3, lines 25-28, stating:* “[A]n ionizable fill is retained in the discharge envelope. The fill, in operation, is, as is customary, a mixture of mercury vapor and a noble gas, for example, argon.”

Reconsideration and withdrawal of the §103 rejection is earnestly solicited.

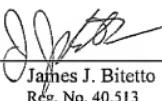
CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests that the rejections of the claims set forth in the Office Action of August 2, 2007 be withdrawn, that pending Claims 1-5 be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 14-1270.

Respectfully submitted,

Dated: 10/24/07

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